



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/086,023

02/28/2002

Thomas H. Zimmerman

22.1468

2691

35204

7590

08/02/2006

SCHLUMBERGER RESERVOIR COMPLETIONS  
14910 AIRLINE ROAD  
ROSHARON, TX 77583

EXAMINER

DANG, HUNG Q

ART UNIT

PAPER NUMBER

2612

DATE MAILED: 08/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/086,023

Applicant(s)

ZIMMERMAN, THOMAS H.

Examiner

Hung Q. Dang

Art Unit

2635

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-11, 14, 16-24, 28, 29, 33, 39-49, 51-56 and 58-69 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 33, 56 and 58-66 is/are allowed.
- 6) ☒ Claim(s) 1-11, 14, 16-24, 28, 29, 39-49, 51-55 and 67-69 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 6/20/2006.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. This communication is in response to application's amendment dated 3/15/2006. The canceled claims 12-13, 15, 25-27, 30-32, 34-38, 50 and 57 have been entered.

### ***Response to Arguments***

2. Applicant's arguments with respect to claims 1-69 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 4-7, 39, 41, 42, 44 and 51 are rejected under 35 U.S.C. 102(b) as being anticipated by Jennings U.S. Patent 5,172,112.

**Regarding claims 1, 4, 39, 41 and 51**, Jennings teaches a system for use in a well, comprising a plurality of wireless networks devices (Figures 2-3, units 15 and 19 are wireless network devices) in the well, the plurality of wireless network devices in the well to communicate wirelessly using a protocol that defines short-range wireless communication (column 3 line 14 to column 4 line 7; communication through a light beam disclosed by Jennings is a short range communication).

**Regarding claim 5**, the downhole device disclosed by Jennings is also a strain gauge (column 2, lines 41-49; strain gauge 21).

**Regarding claims 6 and 42**, Jennings also teaches at least one of the wireless network devices in communication with a power source (column 3 lines 44-51 and column 4 lines 1-7).

**Regarding claim 7**, the moveable unit 19 disclosed by Jennings is considered as a downhole power generator because it provides power to the stationary unit 15 using light beam.

**Regarding claim 44**, Jennings also teaches telemetering data from the well to a position outside the well using at least one of the wireless network devices (column 1, lines 58-61).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3 and 52-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jennings U.S. Patent 5,172,112 in view of HAASE WO 01/63804 A1.

**Regarding claim 3**, Jennings teaches the system of claim 1, except an interlink wireless network device positioned proximal the surface of the well; a communication line interconnecting the interlink wireless network device to a surface controller.

HAASE teaches a wireless network system, which includes an interlink wireless network device (Figure 1, unit 5) positioned proximal the surface of the well; a

communication line (Figure 1, unit 4) interconnecting the interlink wireless network device to a surface controller (implied).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to provide the system of claim 1 disclosed by Jennings with an interlink wireless network device positioned proximal the surface of the well; a communication line interconnecting the interlink wireless network device to a surface controller, as suggested by HAASE, so that the wireless communication system disclosed by Jennings can be provided to the lateral branches of a multilateral well and the communication line interconnecting the interlink wireless network device can be permanently embedded in a well casing (page 4, lines 13-19).

**Regarding claims 52, 53 and 55**, as mentioned above, Jennings teaches a subsea networking system comprising a wireless network device positioned in a subsea structure; a subsea vehicle (column 2, lines 29-33) having a wireless network device therein that is adapted to communicate based on a light beam wireless protocol with the wireless network device positioned in the subsea structure. However, Jennings does not teach said wireless communication protocol being a radio frequency protocol.

One skilled in the art would recognize that RF protocol has been commonly used in many downhole/subsea wireless communication systems as evidenced by HAASE (page 4, lines 20-30).

Therefore, by conventionality, it would have been obvious to one skilled in the art to alternatively provide RF communication, as evidenced by HAASE, to the system disclosed by Jennings.

**Regarding claim 54**, the subsea vehicle disclosed by Jennings is also an ROV (column 2, lines 29-34).

7. Claims 2, 10, 40, 45, 46, 49, 67-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jennings U.S. Patent 5,172,112 in view of Dorenbosch et al. U.S. Patent 6,917,611.

**Regarding claims 2, 10 and 40**, as mentioned above, Jennings teaches a system for use in a well comprising a plurality of wireless network devices (Figures 2-3, units 15 and 19) in the well, the plurality of wireless network devices to communicate wirelessly using optical wireless communication protocol, instead of using Bluetooth wireless communication protocol.

One skilled in the art would recognize that short-range communication methods such as infrared, optical and Bluetooth have been commonly and interchangeably used in various applications, as suggested by Dorenbosch et al. (column 1, lines 54-60).

Since the system disclosed by Jennings uses optical communication protocol and Dorenbosch et al. shows that optical and Bluetooth communications are the common method being interchangeably used for short-range communication between close devices, therefore, it would have been obvious to one skilled in the art at the time

the invention was made to alternatively provide Bluetooth communication protocol to the short-range optical communication system disclosed by Jennings.

**Claims 67-69** are rejected for the same reasons of the rejection of the claimed Bluetooth protocol of claim 2.

**Regarding claim 49**, Jennings also teaches actuating a tool in the well using at least one of the wireless network devices (column 2, strain gauge is a tool for measuring pressure and it is actuated depending on the frequencies of the pulse emitted from unit 19).

**Regarding claims 45-46**, the examiner takes official notice that downhole data communication through a casing/tubing have been conventionally known and used for transmitting downhole data to the surface using a variety of methods such as electromagnetic or acoustic transmission.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to provide data telemetering through a casing/tubing of the system disclosed by Jennings in view of Dorenbosch et al. so that downhole data can be communicated up and down a well.

8. Claims 11, 16-22, 47 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jennings U.S. Patent 5,172,112 in view of Dorenbosch et al. U.S. Patent 6,917,611 and in further view of Tubel et al. U.S. Patent 6,192,980.

**Regarding claim 11**, Jennings in view of Dorenbosch et al. teaches the system of claim 10, except specifically teaching a wireless network outside the well adapted to

communicate wirelessly with at least one of the wireless network devices in the wellhead.

One skilled in the art would recognize that conventional wellbore communication systems have a wired or wireless network device located outside of the well adapted to communicate with at least one of the wired/wireless network devices in the wellhead or network devices located somewhere along the well casing/tubing so that downhole data can be transferred to the surface for processing, monitoring or controlling purposes, as evidenced by Tubel et al.

Tubel et al. teaches a communication system in a well, which includes a wireless network device (Figure 1, unit 24) outside the well adapted to communicate with at least one of the network devices in the wellhead (column 9, lines 45-50).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to provide a wireless network device outside the well adapted to communicate wirelessly with at least one of the wireless network devices in the wellhead of the system disclosed by Jennings in view of Dorenbosch et al., as evidenced by Tubel et al., so that downhole data can be wirelessly communicated to the surface controller and processed.

**Regarding claims 16-20**, Tubel et al. also teaches at least one secondary communication system in communication with the at least one of the wireless network devices (Figure 1, units 52, 50, 10, 24 form a secondary communication system (satellite); column 9, lines 45-50).



Therefore, it would have been obvious to one skilled in the art at the time the invention was made to provide a secondary communication system in communication with the at least one of the wireless network devices of the system disclosed by Jennings in view of Dorenbosch et al., as evidenced by Tubel et al., so downhole data can be communicated to the surface and transferred to other locations.

**Regarding claims 21 and 22**, the examiner takes official notice that many conventional well systems having a wireless network device(s) mounted in a well, on a running tool, on the casing or on a drill string depending on the design of each communication system so that optimal efficiency can be achieved.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to provide mounting a wireless network device disclosed by Jennings in view of Dorenbosch et al. and Tubel et al. in the well or on a running tool to achieve a desired communication system.

**Regarding claim 47**, Jennings in view of Dorenbosch et al. teaches the method of claim 40, except further comprising storing information downhole; and transferring the stored information to a running tool via at least one of the wireless network devices.

Tubel et al. teaches a wireless communication system in a well, which further comprises transferring stored information to a running tool via a wireless network device (column 9, lines 45-64).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to further provide transferring stored information to a running tool

Art Unit: 2635

via at least one of the wireless network devices of the system disclosed by Jennings in view of Dorenbosch et al., as evidenced by Tubel et al., in order to monitor and control downhole tools.

**Regarding claim 48**, Tubel et al. also teaches determining the depth of a tool in the well (Figure 5, unit 44 is a depth measuring system). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to provide depth measurement capability to the system disclosed by Jennings in view of Dorenbosch et al., in order to determine the depth of a tool(s).

9. Claims 14, 23, 24, 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jennings U.S. Patent 5,172,112 in view of Tubel et al. U.S. Patent 6,192,980.

**Regarding claims 14, 23 and 24**, Jennings teaches a system of claim 1, except further comprising a wireless network device outside the well adapted to communicate wirelessly with at least one of the wireless network devices in the well using the protocol.

One skilled in the art would recognize that conventional wellbore communication systems have a wired or wireless network device located outside of the well adapted to communicate with at least one of the wired/wireless network devices in the wellhead or network devices located somewhere along the well casing/tubing so that downhole data can be transferred to the surface for processing, monitoring or controlling purposes, as evidenced by Tubel et al.

Tubel et al. teaches a communication system in a well, which includes a wireless network device (Figure 1, unit 24) outside the well adapted to communicate with at least one of the network devices in the wellhead (column 9, lines 45-50).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to provide a wireless network device outside the well adapted to communicate wirelessly with at least one of the wireless network devices in the wellhead of the system disclosed by Jennings, as evidenced by Tubel et al., so that downhole data can be wirelessly communicated to the surface controller and processed.

**Regarding claims 28 and 29**, the examiner takes official notice that positioning a third wireless network device (as a signal repeater or a relay means) inside the casing of the well so that the first wireless network device can relay information between the second wireless network device and the third wireless network device has been commonly known and applied so that data can be relayed/repeated.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to provide a third network device positioned inside the casing of the well disclosed by Jennings in view of Tubel et al. so that information signal can be relayed/repeated between the other two network devices.

10. Claims 8, 9 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jennings U.S. Patent 5,172,112 in view of Dorenbosch et al. U.S. Patent 6,917,611 and in further view of HAASE WO 01/63804 A1.

**Regarding claims 8 and 43**, Jennings in view of Dorenbosch et al. teaches the system of claim 2, except at least one of the wireless network devices positioned in a lateral branch of a multilateral well.

HAASE also teaches a wireless communication network, wherein one network device (Figure 1, unit 7) is positioned in a lateral branch (Figure 1, unit 2) of a multilateral well.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to further provide a multilateral well, wherein at least one of the wireless network devices disclosed by Jennings in view Dorenbosch et al. is positioned in a lateral branch of said multilateral well, as evidenced by HAASE, in order to control/monitor downhole tools in lateral branch(s) of a multilateral well.

**Regarding claim 9**, Jennings in view of Dorenbosch et al. teaches the system of claim 2, **except** wherein a first of the wireless network devices is positioned in a lateral branch of a multilateral well; a second of the wireless network devices is positioned outside the lateral branch in another portion of the well; the first wireless network device and second wireless network device positioned within range of one another.

HAASE teaches a wireless multilateral well, which comprises a first of the wireless network devices is positioned in a lateral branch of a multilateral well (Figure 1, unit 7); a second of the wireless network devices is positioned outside the lateral branch in another portion of the well (Figure 1, unit 5); the first wireless network device and second wireless network device positioned within range of one another.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to further equip the short-range communication system disclosed by Jennings in view of Dorenbosch et al. with a wireless multilateral well, which comprises a first of the wireless network devices is positioned in a lateral branch of a multilateral well; a second of the wireless network devices is positioned outside the lateral branch in another portion of the well; the first wireless network device and second wireless network device positioned within range of one another, as evidenced by HAASE, in order to control/monitor downhole tools in the lateral branch of said multilateral well.

***Allowable Subject Matter***

11. Claims 33, 56 and 58-66 are allowed.

**Regarding claims 33 and 60**, the prior arts of record fail to teach or disclose a system as claimed in claims 33 and 60, respectively, which further comprises at least another wireless network device for location in the well, the first wireless network device to perform triangulation of signals to determine relative position of the tool to the second wireless network device and the at least another wireless network device.

**Regarding claim 56**, the prior arts of record fail to teach or disclose a subsea telemetry system as claimed in claim 55, which further comprises a guidance circuitry of the subsea vehicle in communication with the wireless network device of the subsea vehicle, the guidance circuitry adapted to determine the relative position of the subsea vehicle based upon input from the interconnected wireless network device.

**Regarding claim 58**, the prior arts of record fail to teach or disclose the system as claimed in claim 58, wherein the second wireless network device transmits the location code to the first network device.

**Regarding claim 61**, the prior arts of record fail to teach or disclose a system for use in a well as claimed in claim 61, which comprises a tool containing a first wireless network device and the tool is movable in the well during a downhole operation; wherein the second wireless network device sends an actuating signal to the first wireless network device for actuating the tool once the tool comes within range of the second wireless network device.

### **Conclusion**

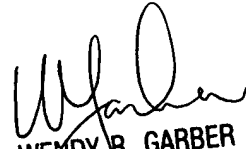
12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Q. Dang whose telephone number is (571) 272-3069. The examiner can normally be reached on 9:30AM-6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (571) 272-7308. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Hung Q. Dang  
6/23/2006  
H.D.

HD

  
WENDY R. GARBER  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600